

DOMINTELL RS232 / ETHERNET communication interfaces

The goal of this document is to describe DomIntell's RS232 & ETHERNET interfaces.
It will help you to make the good choice between the options available.
Input protocol specifications are the same for all modules.
Output protocol specifications are different.

DRS2320x :

The hardware doesn't change but the functions depend on the embedded software.
DRS2320x modules are explained below in details.

DETH0x :

The hardware doesn't change but the functions depend on the embedded software.
DETH0x modules are explained below in details.

Document revisions :

v1.18 : 27/08/2010 :

DRS23202 (v14) + DETH02 (v6) :

Info returned by TSBxxxxxx%S is now correct (crlf sequence missing)

v1.18 : 12/07/2010 :

v1.18.03f : Automatic light protocol improvements

add module type 'I10' (DIN10V02)

DRS23202 (v13) + DETH02 (v5) :

decode COVALUES10V

v1.18 : 18/11/2009 :

libdeth : version 3.0.0 release :

- Modify function prototype (safer)

- Add functions deth_get_major_version, deth_get_minor_version and

deth_get_micro_version

v1.18.01 : Automatic light protocol improvements

add module type 'DMX' (DMX01) but no action/Info defined (later)

v1.17 : 31/03/2009 :

libdeth : version 2.0.0 release (function name has changed - "@" removed)

v1.17 : 31/03/2009 :

v1.17.02 : Automatic light protocol improvements

add %P (Push) parameter (simulate a push on MODxISM, MODBUx)

add %DB (Start Dim) and %DE (Stop Dim) params on 'DIM', 'D10', memo dim

add %I%Dxxx (inc by step) and %O%Dxxx (dec by step) params

on 'DIM', 'D10', memo dim and 'AMP'

add %S (status) parameter for all modules and VAR

add %K (Clock) parameter for Clock setting

DRS23202 (v11) + DETH02 (v2) :

add module type 'TPR' (Plage name) and 'TPL' (Plage list)

add 'P' data type for 'TPL' module type

add module type 'CLK' (Clocks)

add 'K' data type for 'CLK' module type

v1.17 : 02/03/2009 :

add %M (mode) parameter for temp. sensor

v1.17 : 18/11/2008 :

HELLO command

v1.17 : 27/10/2008 :

Add information about "Exclusive session"

v1.17 : 11/08/2008 : DRS23202 version 10

MOD_VERSION command

v1.17 : 29/07/2008 : config version v1.17.00

Automatic protocol : T° zones handling

APPINFO command : variables descriptions added

v1.16 : 27/06/2008 : config version v1.16.05

DRS23201 version 5 : can handle all control characters

v1.16 : 13/05/2008 : config version v1.16.03

New memo & sfer automatic input commands

DRS23201 version 4 : parity handling

DRS23202 : DPBTLCD0x handling + DFAN01 improvements (v9)

Description of APPINFO command + display [house|floor|room] + [memo type]

Extended T° display in light protocol.

DETH01 – DETH02 – DETH03 (available from 1.17.00)

SDK : Explanations of password encoding library.

Ethernet/Internet routers explanation.

T° mode handling on sensors

v1.15 : 04/07/2007 : config version v1.15.00

Changes in shutter automatic input commands (DTRV01, DTRP02 & DTRVBT01)

v1.12 : 05/03/2007 : config version v1.14.00

add of DFAN01, DMR01, DLCD03, DIN10V01 modules

add of APPINFO command

add of %I & %O parameters

DRS23202 version 7

v1.11 : 09/01/2007 : config version v1.13.08

add of DOUT10V01 module

DRS23202 version 6

DOMINTELL RS232 / ETHERNET communication interfaces

Devices overview :

DRS23201 : RS232 String exchange interface.

DRS23202 : RS232 Light protocol interface.

DETH02 : ETHERNET Light protocol interface (same functions than DRS23202 on ethernet).

!! Only one DETH02 or (exclusive) one DRS23202 can be connected at the same time on Domintell bus. !!

General information :

The goal of this document is to describe DomIntell's RS232 & ETHERNET interfaces and to help you to make the good choice between the options available. You have to know that the hardware doesn't change but the functions depend on the embedded software. The DRS2320x (01-02) and DETH0x (01-02) modules are explained below in details. Input protocol specifications are the same for the 2 modules. Output protocol specifications are different.

General description :

The goal of the module is to interface your device and your Domintell installation through an RS232/ETHERNET port. ASCII strings are sent and received.

A wide range of actions can be executed on the system in function of strings & links you will program.

RS232 wiring information : For a specific handshake, support.domintell@trump.be .

Pin 1 : NC

Pin 2 : TX Data Out

Pin 3 : RX Data In

Pin 4 : DSR Signal In (reserved for handshake - not used)

Pin 5 : Ground

Pin 6 : DTR Signal Out (reserved for handshake - not used)

Pin 7, 8 and 9 : NC

ETHERNET wiring information : For a specific handshake, support.domintell@trump.be .

The RJ45 connector must be connected to the LAN (Local Area Network) with a classic UTP RJ45 Cable (CAT5)

WARNING :

Do NOT connect Domintell bus on the DETH0x RJ45 connector, this can cause fatal damages to the DETH0x module.

ETHERNET connection : (Configuration software => edit module parameters)

- IP : Use DHCP by default (IP can be set manually)
- Domintell UDP Port : 17481 (default). (Can be easily changed)
- DHCP Ports : 67 and 68
- If the "Exclusive session" box is checked, the current connected client must close (logout) the session or the session must be expired before another client can send a new login request. For the configuration of the session, please refer to the user's manual of Domintell Software.
- Password : default = none.

To exchange frame between the remote host and the Domintell installation, you have to **open a session** on the DETH02 by sending an UDP datagram (looking like "LOGINmyencryptedpassword") generated by libdeth library. If no password is set you can only send "LOGIN". We published online linux library & Windows dll files to compute your crypted password.

See Tutorial below to interface DETH0x modules with your own application

INTERNET routers information : For more informations, see wiring datasheet

Please refer to the installation manual of your router to setup the "port forwarding"/NAT function.

The explanation that follow was made on a Wireless router from Philips.

!! By allowing incoming connections from the Internet, your local network could be attacked if you don't configure correctly your router. Please ask help of your network administrator if you don't know what you are exactly doing.

Input Protocol Specifications : sent to your DomIntell installation (Only for DRS2320x/DETH02)

1. **General properties** :

- Between 2 RS232 messages : minimum 25 milliseconds OR the reserved character '&'.
- Encapsulate multiple commands into an ethernet frame : reserved '&' character.
- You can start all messages with a '&' if needed.
- Maximum 30 characters for a message.
- The string 'PING' is reserved : see DRS23202 / DETH02.
- The string 'APPINFO' is reserved : see DRS23202 / DETH02.
- The string 'LOGIN' is reserved : see DETH02.
- The string 'LOGOUT' is reserved : see DETH02.
- The string 'DISCOVER' is reserved : see DETH02.
- The string 'MOD_VERSION' is reserved : see DRS23202 / DETH02.
- The string 'HELLO' is reserved : see DRS23202 / DETH02.
- Strings '<CR>', '<LF>' and '<TAB>' are replaced by the equivalent character.
- Carriage return & line feed characters are supported at the end of the command line.
- In extended mode (since version 5), control characters can be inserted with '<xx>' where 'xx' is the decimal code. It can be a value between '00' to '31' and must have a length of 2 character.
- Be careful with characters '<CR>' and '<LF>' at the end of the messages.
- DomIntell Automatically suppress the SPACE character at the begin or at the end of the message.
- Lower case characters are automatically replaced with upper case equivalent. (Be careful with éèêâñáí...)
- We advise to use only ASCII characters.
- DFAN01 : for security reasons, valves always follow the setpoint regulation, so if you need to toggle the valves of the DFAN01, you must first change the setpoint on the associated sensor.
If valves are OFF, fan will not start.
6th DFAN01 output is the working mode : 0 = auto, 1 = manual.
- Additional Parameters** : after the character '%' (reserved char)
 - '%Dxxx' decimal dimmer/volume value assignment
 - '%DB' and '%DE' : execute a Start/Stop dim on a dimmer output
 - '%I%Dxxx' and '%O%Dxxx' Increase and Decrease dimmer/volume value by step of decimal 'xxx' percent
 - '%Txx.x' decimal T° value
 - '%Ax' Sound Auxiliary selection 1=>4, Tuner = 5
 - '%Fxxx,xxxx' decimal Tuner Frequency in Mhz
 - '%I' set the output
 - '%O' reset the output
 - '%M' set Temperature mode
 - '%S' ask status of module (doesn't work with MEMO)
 - '%P' simulate a push on an input
(1=Begin of short push; 2=End of short push; 3=Begin of long push; 4=End of long push)

2. **Input string treatment** :

- You can create «string» links : drag & drop an output on the DRS2320x / DETH02 input. Enter the text and select the action on the output.
- If match case with the received text, the action will be executed.
- Important** : we advise you to make less than 100 «string» links on the same DRS2320x / DETH02 input because it's a lot of work for the Central Unit. A WARNING will be displayed into the Diagnose function if there's more than 100 «string» links. Have a look at point 3. to use the automatic commands.

3. **Commands without any link : Automatic Light Protocol**

The automatic light protocol is used to manage your Domintell installation without making any link between a text and an output. It can also be used with the DGSM01 Module.

- Frame description** :

Mod Type (3 char)	Serial Number (6 char hexadecimal product label)	-	Output Number (1 char)	Additional parameters
-------------------	--	---	------------------------	-----------------------



- Samples of strings sent to your Domintell installation :

<u>Text</u>		<u>Means</u>
BU1	11-1	Change output 1 on module DPBU01 with serial number 0x000011
BU1	11%S	Get Status of input (button) and output (LED's) on module DPBU01 with serial number 0x000011
BU2	52-2	Change output 2 on module DPBU02 with serial number 0x000052
BU4	4F-4&BU6 8A-6	Change output 4 on module DPBU04 with serial number 0x00004F and Change output 6 on module DPBU06 with serial number 0x00008A
BU2	52-2%P1	simulate Begin of short push on button 2 of module DPBU02 with serial number 0x000052
BU6	134-1%P2	Simulate End of short push on button 1 of module DPBU06 with serial number 0x000134
IS4	CD-4%P3	Simulate Begin of long push on input 4 of module DISM04 with serial number 0x0000CD
IS8	2D8-7%P4	Simulate End of long push on input 7 of module DISM08 with serial number 0x0002D8
BIR	3A6-8	Change output 8 on module DBIR01 with serial number 0x0003A6
TRV	73-1	Change shutter 1 on module DTRV01 with serial number 0x000073
TRP	151-4	Change output 4 on module DPBU06 with serial number 0x00008A
DIM	19F-8	Change output 8 on module DDIM01 with serial number 0x00019F
DIM	19F-6%D50	Set output 6 to 50% on module DDIM01 with serial number 0x00019F
DIM	19F-6%DB	Start dimming on output 6 on module DDIM01 with serial number 0x00019F (v1.17.02)
DIM	19F-6%DE	Stop dimming on output 6 on module DDIM01 with serial number 0x00019F (v1.17.02)
DIM	19F-6%ID10	Increase by step of 10% the value on output 6 on module DDIM01 with serial number 0x00019F (stop at 100%) (v1.17.02)
DIM	19F-6%OD7	Decrease by step of 7% the value on output 6 on module DDIM01 with serial number 0x00019F (stop at 0%) (v1.17.02)
LED	C2-1	Change output 1 on module DLED01 with serial number 0x0000C2
VAR	1	Change variable 1
SYS	1	Change system variable 1
SYS	1%S	Get status of system variable 1
TPV	3-1	Change shutter 1 on module DTRPV01 with serial number 0x000003
D10	1-1	Change output 1 on module DOUT10V01 with serial number 0x000001
D10	1-1%D60	Set output 1 to 60% on module DOUT10V01 with serial number 0x000001
D10	1-1%ID5	Increase output value of module DOUT10V01 with serial number 0x000001 by step of 5% (v1.17.02)
D10	1-1%OD11	Decrease output value of module DOUT10V01 with serial number 0x000001 by step of 11% (v1.17.02)
V24	1-1	Change shutter 1 on module DTRVBT01 with serial number 0x000001
TSB	8D%T24.5	Set T° to 24,5°C on module DTSC0x with serial number 0x00008D
TE2	A%M2	Set Mode to Absence on module DTEMP01 with serial number 0x00000A
I10	5%S	Ask Status of the input of DIN10V with serial number 0x000005
AMP	3-1%D50%A1	Output 1 to Aux 1 at volume 50 on module DAMPLI01 with serial number 0x000003
AMP	3-1%ID15	Increase volume of Output 1 by step of 15% on module DAMPLI01 with serial number 0x000003 (v1.17.02)
AMP	3-1%OD9	Decrease volume of Output 1 by step of 9% on module DAMPLI01 with serial number 0x000003 (v1.17.02)
AMP	3-2%D60°F99.1%A5	Output 2 to Tuner at Volume 60 & Freq 99,1MHZ on module DAMPLI01 with serial number 0x000003
AMP000003-4		Change output 4 volume on module DAMPLI01 with serial number 0x000003
AMP000003%S		Ask status of all output of module DAMPLI01 with serial number 0x000003
BIR	3A6-6%I	Set output 6 on module DBIR01 with serial number 0x0003A6
BIR	3A6-6%O	Reset output 6 on module DBIR01 with serial number 0x0003A6
TRV000073-1		toggle shutter 1 with serial number 0x000073 (v1.15.00)



TRV000073-2	toggle shutter 1 with serial number 0x000073 (v1.15.00)
TRV000073-3	toggle shutter 2 with serial number 0x000073 (v1.15.00)
TRV000073-4	toggle shutter 2 with serial number 0x000073 (v1.15.00)
TRV000073-1%I	Set relay 1 (shutter 1 UP) with serial number 0x000073 (v1.15.00)
TRV000073-2%I	Set relay 2 (shutter 1 DOWN) with serial number 0x000073 (v1.15.00)
TRV000073-3%I	Set relay 3 (shutter 2 UP) with serial number 0x000073 (v1.15.00)
TRV000073-4%I	Set relay 4 (shutter 2 DOWN) with serial number 0x000073 (v1.15.00)
TRV000073-1%O	Stop shutter 1 with serial number 0x000073 (v1.15.00)
TRV000073-2%O	Stop shutter 1 with serial number 0x000073 (v1.15.00)
TRV000073-3%O	Stop shutter 2 with serial number 0x000073 (v1.15.00)
TRV000073-4%O	Stop shutter 2 with serial number 0x000073 (v1.15.00)
MEM000001%I	SET Memo 1 (v1.16.02)
MEM000001%O	RESET Memo 1 (v1.16.02)
MEM000001%D50	SET 50% to dimmer memo 1 (v1.16.03)
MEM000001%I%D5	Increase value of dimmer memo 1 by step of 5% (v1.17.02)
MEM000001%O%D17	Decrease value of dimmer memo 1 by step of 17% (v1.17.02)
SFE000001	SET Sfere 1 (v1.16.03)
SFE000001%I	SET Sfere 1 (v1.16.03)
SFE000001%S	Get status of each item in the Sfere 1 (v1.17.02)
PBL C-6%I	SET DPBTLCD0x 6 th output
PBL C-1%O	RESET DPBTLCD0x 1 st output
PBL C-1%P2	simulate begin of short push on button 1 of module DPBTLCD0x with serial number 0x00000C (v1.17.02)
PBL 13%S	Return status (Temp -> only for DPBTLCD02) of module DPBTLCD02 with serial number 0x000013 (v1.17.02)
FAN000001-1%I	Set speed 1
FAN000001-2%I	Set speed 2
FAN000001-3%I	Set speed 3
FAN000001-4%I	Set Heating (if speed different of 0) Advise : change T° sensor setpoint!
FAN000001-5%I	Set Cooling (if speed different of 0) Advise : change T° sensor setpoint!
FAN000001-6%I	Set Manual mode
FAN000001-6%O	Set Automatic mode
ZON000001%I	T° Zone 1, increment setpoint. (T° zones since v1.17.00)
ZON000001%O	T° Zone 1, decrement setpoint.
ZON000001%T15.5	T° Zone 1, setpoint to 15.5°C.
ZON000001%M1	T° Zone 1, set T° mode to absence.
ZON000001%M2	T° Zone 1, set T° mode to automatic.
ZON000001%M5	T° Zone 1, set T° mode to comfort.
ZON000001%M6	T° Zone 1, set T° mode to frost (if frost mode enabled).
CLK000001%K00:22:00 7F 00/05/09	Set Clock 1 at 00h22m00s for all weekdays during month of may (v1.17.02)
CLK000001%K00:22:00 FF 00/05/09	Disable Clock 1 and set datas to 00h22m00s for all weekdays during month of may (v1.17.02)
CLK000001%K01:22:00 08 00/00/00	Set Clock 1 at 01h22m00s each wednesday (v1.17.02)

Output Protocol Specifications : sent to your device.

Depends of the embedded softwares described below.

DOMINTELL DRS23201 communication interfaces

General description :

The goal of this embedded software is to interface devices like an alarm system, a PC, an external sound module, ... through an RS232 port. ASCII strings are exchanged between your device and your DomIntell installation. Each text message must be defined in your DomIntell application.

RS232 Data Format :

8 data bits

Parity selection (since module version 4) : none, even, odd.

1 stop bit

RS232 Baud Rate :

Available : 1200, 2400, 4800, 9600, 19200, 38400, 76800. (Configuration software => edit module parameters)

Input Protocol Specifications : sent to your Domintell installation.

- The general input protocol specifications are available (explained upside).

Output Protocol Specifications : sent to your device.

- You can create «string» links : drag & drop the module output on an input.
- If the correspondent event occurs on the input, the text is sent to the module.

DOMINTELL DRS23202 & DETH02 « Light Protocol » communication interfaces

General Description :

The goal of this embedded software is to give you a real-time status of your Domintell installation through an RS232/ETHERNET port. We advise all PC/system integrators to use this module. You don't have to treat or produce each text message. It transfers an ASCII text to your device for each status change on your DomIntell installation. It also treats programmed text commands in your application and executes automatic commands for an easy bidirectional communication (since version 1.12.01 and higher).
Maximum installation = 240 modules.

RS232 Data Format :

8 data bits
Parity : none.
1 stop bit

RS232 Baud Rate : is fixed to 57600

RS232 Versions :

1. 09/2005 : First release
2. 10/2005 : -
3. 02/2006 : add DTRVBT01, DOUT10V01
4. 03/2006 : add DTRP02
5. 07/2006 : add of DAMPLI01
6. 09/2006 : add clock transfer : once a minute
7. 03/2007 : add of DFAN01, DMR01, DLCD03, DIN10V01
8. 10/2007 : no changes - review for compatibility with DETH0x
9. 05/2008 : add DPBTLCD0x + extended tests
10. xx/2009 : internal release
11. 03/2009 : add clock list, plage list; modifying of clocks and plages; add status command for all module types

ETHERNET Versions :

1. 11/2008 : First release
2. 03/2009 : add clock list, plage list; modifying of clocks and plages; add status command for all module types

Input Protocol Specifications : sent to your DomIntell installation.

- The general input protocol specifications are available (explained upside).
- The string 'PING' asks all statuses of your Domintell installation to your DGQG01. (Inputs, Outputs, Vars, T°, ...). It can be used to refresh all status & values. The module answers 'PONG<CR><LF>' to the string 'PING', then you will receive many texts with all status.
- The string 'APPINFO' returns you info about the application like description, labels, room/floor, sfeers, memos & variables.

Output Protocol Specifications : sent to your device.

1. **Frame description :**

Mod Type (3 char)	Serial Number (6 char hexadecimal product label)	Data Type (1 char)	Datas (n * 2 char hexa)	<CR><LF>
-------------------	--	--------------------	-------------------------	----------

2. **Data Types :**

Char	Means	Description (some '0' can be replaced by ' ' (space))
'I'	Inputs	LSB = input 0, MSB = input 7
'O'	Outputs	LSB = output 0, MSB = output 7
'D'	Dimmers	2 first bytes = first output (%) Example : '64' = 100%
'T'	Temperature	Example : '20.5 22.0 AUTO 18.0 ' 1 st T° = measure (with software offset) 2 nd T° = setpoint value Sensor T° Mode 3 rd T° = range value You can place a comma in place of a dot.
'C'	Infrared Command	Example : Key 1 = '01'
'S'	Sound	'1-32-TUNE-63-03E8' = Output 1 – 50% - Source Tuner – 99,1000 Mhz (Since card version 5)
'B'	Button	2 bytes(button number) + 2 bytes (00=released 01=pressed)
'P'	Temp. Plage	Example : 12:32:00 21.6 1 st = hh:mm:ss 2 nd = setpoint value
'K'	Clocks	Example : 00:38:00 7F 00/01/04 Clock 1 st = hh:mm:ss 2 nd = Day mask (b0=sunday, b1=monday, ... b7= disable clock (=1)) 3 rd = Name 4 th = Type of clock : blank (normal), SUNSET, SUNRISE, RESET

3. **Module Types :**

Reference	Mod Type	Description	Features
DISM08	IS8	8 Inputs module	I
DISM04	IS4	4 Inputs module	I
DPB(U/T)01	BU1	1 Push Button Aluminium	I,O
DPB(U/T)02	BU2	2 Push Button Aluminium	I,O
DPB(U/T)04	BU4	4 Push Button Aluminium	I,O
DPB(U/T)06	BU6	6 Push Button Aluminium	I,O
DLCD01	LCD	4*20 char LCD with 2 inputs	I
DBIR01	BIR	8 bipolar relays	O
DTRV01	TRV	4 shutter inverters Bit 0 Relay 1 = UP Bit 1 Relay 1 = DOWN ...	O
DTRP01	TRP	4 teleruptors	O
DDIM01	DIM	8 dimmer commands	D
DTEM01	TE1	Temperature sensor	T,M
DTEM02	TE2	Temperature sensor with 2*16 char LCD	T,M
DDIR01	DIR	IR detector	C
DLED01	LED	4 leds driver	O
DMOV01	DET	Infrared detector	I
DTSC0x	TSB	Touchscreen	I,T,M
DTRVBT01	V24	1 DC shutter command Bit 0 = UP – Bit 1 = DOWN	O (Low voltage TRV – 1 out – available soon)
DAMPLI01	AMP	Sound Module	S
Software Vars	VAR	Virtual programmed status	O,D,T,M (serial = number in order of appearance on the configuration screen) So you'll be able to create different events.
System Vars	SYS	System status	O (Since v1.12.01 & higher)
DTRP02	TPV	2 shutter command with teleruptors Bit 0 Relay 1 = UP Bit 1 Relay 1 = DOWN ...	O (since card's soft version 3)
DOUT10V01	D10	0/1-10V dimmer module	D

DLCD03	LC3	Multifunction LCD	I, O, T,M
DFAN01	FAN	Fan controler	O
DMR01	DMR	5 Monopolar relays	O
DIN10V01	I10	Analog 0-10V input module	D
DPBTLCD0x	PBL	LCD push buttons	B, O, T,M (T & M = DPBTLCD02 only)
DDMX01	DMX	DMX Module	(none yet)
Temp. Profile	TPR	Profile's name which contains next Temp. plage lists received	
Temp. Plage List	TPL	Specific range of a Temp. profile	P
Clocks	CLK	Programmes clock (normal, reset and astronomical)	K

4. Sample of received strings :

<u>Text</u>	<u>Means</u>
PONG	answer from DRS23202 after a string "PING"
MOD_VERSION=SER_V0A	answer from DRS23202 after a string "MOD_VERSION" (hexa)
MOD_VERSION=ETH_V01_STK_V01	answer from DETH02 after a string "MOD_VERSION" (hexa)
TE1 6CT25.2 21.0 AUTO 19.5	Temperature on module DTEM01 with serial number 0x00006C
TE2 58T23.7 18.0 ABSENCE 18.0	Temperature on module DTEM02 with serial number 0x000058
TE2 58T20.9 21.0 COMFORT 21.0	Temperature on module DTEM02 with serial number 0x000058
BU1 11000	Outputs OFF on module DPBU01 with serial number 0x000011
BU2 52001	led 1 ON on module DPBU02 with serial number 0x000052
BU4 4F000	Outputs OFF on module DPBU04 with serial number 0x00004F
BU6 8A000	Outputs OFF on module DPBU06 with serial number 0x00008A
BIR 3A6000	Outputs OFF on module DBIR01 with serial number 0x0003A6
TRV 73000	Outputs OFF on module DTRV01 with serial number 0x000073
TRP 151000	Outputs OFF on module DTRP01 with serial number 0x000151
DIM 19FD 064 0 0 0 0 0 0	Dim 2 = 100% on module DDIM01 with serial number 0x00019F
LED C2000	Outputs OFF on module DLED01 with serial number 0x0000C2
IS4 7I00	Inputs OFF on module DISM04 with serial number 0x000007
IS8 4F8I10	Key 4 ON on module DISM08 with serial number 0x0004F8
BU1 11I00	Inputs OFF on module DPBU01 with serial number 0x000011
BU2 52I00	Inputs OFF on module DPBU02 with serial number 0x000052
BU4 4FI00	Inputs OFF on module DPBU04 with serial number 0x00004F
BU6 8AI00	Inputs OFF on module DPBU06 with serial number 0x00008A
LCD 25I00	Inputs OFF on module DLCD01 with serial number 0x000025
VAR 1001	Variable 1 True
VAR000001000	Variable 1 False
VAR 1D64	Variable 1 100%
SYS 1001	System Variable 1 True
TPV 3001	shutter 1 : UP on module DTRP02 with serial number 0x000003
D10 1D32	50% on module DOUT10V01 with serial number 0x000001
V24 1001	shutter 1 : UP on module DTRVBT01 with serial number 0x000001
PBL C000	Outputs OFF on module DPBTLCD0x with serial number 0x00000C
PBL CT24.0 18.0 AUTO 12.0	Temperature on module DPBTLCD02 with serial number 0x00000C
PBL CB0101	Push Button 1 on DPBTLCD with serial number 0x00000C
PBL CB0100	Release Button 1 on DPBTLCD with serial number 0x00000C
PBL C000	DPBLCD0xwith serial number 0x00000C outputs are OFF
PBL C002	2 nd DPBLCD0xwith serial number 0x00000C output is ON
AMP 3S1-1D-TUNE-6A-0FA0	Output 1, 29%, Tuner, 106.4000MHZ on module DAMPLI01 with serial number 0x000003
AMP 3S3-32-AUX1-64-0000	Output 3, 50%, Aux 1, 100.0000MHZ on module DAMPLI01 with serial number 0x000003
FAN000001020	DFAN01 module with serial number 0x000001 is OFF, manual mode
FAN000001011	DFAN01 module with serial number 0x000001 is cooling @ speed 1, auto mode
FAN00000100C	DFAN01 module with serial number 0x000001 is heating @ speed 3, auto mode
FAN000001032	DFAN01 module with serial number 0x000001 is cooling @ speed 2, manual mode
I10000005D32	Input = 50% on DIN10V02 with serial number 0x000005
CLK 2K08:05:00-7F-00/00/00-Clock[SUNRISE]	Clock 2 is an astronomical sunrise clock set (this week) to 8h05m00s all weekdays
TPR 2Range N°2	Profile 2 is named 'Range N°2'
TPL 8P15.5-02:45:00	Setpoint of Range 8 will be 15.5°C from 2h45m00s

**5. Sample of received strings after APPINFO :**

```
APPINFOAPPINFO (PROG M 1.16 15/04/08 11h35 Rev=2) => tst_rs02.dap :
BU4 1-1 : Entrée B4 1 [House|1st floor|living]
BU4 1-2 : Entrée B4 2 [House|1st floor|living]
BU4 1-4 : Entrée B4 4 [House|1st floor|living]
BU4 1-3 : Entrée B4 3 [House|1st floor|living]
BU4 1-5 : LED B4 1 [House|1st floor|living]
BU4 1-6 : LED B4 2 [House|1st floor|living]
BU4 1-7 : LED B4 3 [House|1st floor|living]
BU4 1-8 : LED B4 4 [House|1st floor|living]
BU4 6-1 : Entrée B4 1 [House|1st floor|kitchen]
BU4 6-2 : Entrée B4 2 [House|1st floor|kitchen]
BU4 6-3 : Entrée B4 3 [House|1st floor|kitchen]
BU4 6-4 : Entrée B4 4 [House|1st floor|kitchen]
BU4 6-5 : LED B4 1 [House|1st floor|kitchen]
BU4 6-6 : LED B4 2 [House|1st floor|kitchen]
BU4 6-7 : LED B4 3 [House|1st floor|kitchen]
BU4 6-8 : LED B4 4 [House|1st floor|kitchen]
BIR 4C9-1 : BIR 1 [House|2nd floor|]
BIR 4C9-2 : BIR 2 [House|2nd floor|]
BIR 4C9-3 : BIR 3 [House|2nd floor|]
BIR 4C9-4 : BIR 4 [House|2nd floor|]
BIR 4C9-5 : BIR 5 [House|2nd floor|]
BIR 4C9-6 : BIR 6 [House|2nd floor|]
BIR 4C9-7 : BIR 7 [House|]
BIR 4C9-8 : BIR 8 [House|]
TRV 3E8-1 : TRV 1 [House|]
TRV 3E8-3 : TRV 2 [House|]
TRV 3E8-5 : TRV 3 [House|]
TRV 3E8-7 : TRV 4 [House|]
DIM 21A-1 : DIM 1 [House|]
DIM 21A-2 : DIM 2 [House|]
DIM 21A-3 : DIM 3 [House|]
DIM 21A-4 : DIM 4 [House|]
DIM 21A-5 : DIM 5 [House|]
DIM 21A-6 : DIM 6 [House|]
DIM 21A-7 : DIM 7 [House|]
DIM 21A-8 : DIM 8 [House|]
PBL C-7 : Sonde T° DPBTLCD0x [House|]
PBL C-8 : PB 1 [House|]
PBL C-9 : PB 2 [House|]
PBL C-A : PB 3 [House|]
VAR 1 : My variable [House|Floor|Room] [BOOL]
VAR 2 : My variable 2 [House|Floor|Room] [VALU,00->100,LOOP]
SYS 0 : Presence simulation [House|] [BOOL]
SYS 1 : T° mode [House|] [VALU,01->02,LOOP]
PBL C-B : PB 4 [House|]
SYS 2 : Absence T° [House|] [TEMP,05,0°->30,0°] !! Don't modify it !!
SYS 3 : Comfort T° [House|] [TEMP,05,0°->30,0°] !! Don't modify it !!
SYS 4 : Frost T° [House|] [TEMP,05,0°->30,0°] !! Don't modify it !!
SYS 5 : Maxi T° [House|] [TEMP,05,0°->30,0°] !! Don't modify it !!
SYS 6 : Mini T° [House|] [TEMP,05,0°->30,0°] !! Don't modify it !!
SYS 7 : Alarm mode [House|] [BOOL] !! Don't modify it !!
SYS 8 : Summer/winter mode [House|] [VALU,00->00,STOP] !! Don't modify it !!
SYS 9 : Day [House|] [BOOL] !! Don't modify it !!
SYS A : Temperature of compensation [House|] [TEMP,00,0°->00,0°] !! Don't modify it !!
SYS B : Hysteresys temperature [House|] [TEMP,00,0°->00,0°] !! Don't modify it !!
SYS C : Max absence temperature [House|] [TEMP,00,0°->00,0°] !! Don't modify it !!
MEM 1 : Memo 1 [House|] [MIX]
MEM 2 : Memo 2 [House|] [SHUTTERS]
MEM 3 : Memo 3 [House|] [DIMMERS]
MEM 4 : Memo 4 [House|] [SOUND]
MEM 5 : Memo 5 [House|] [FAN]
MEM 6 : Memo 6 [House|] [FOLLOWERS]
SFE 1 : Ambiance 1 - Scène 1 [House|]
SFE 2 : Ambiance 1 - Scène 2 [House|]
ZON 1 : Zone 1 [House|]
CLK 1K00:38:00-7F-04/01/00-Clock
CLK 2K08:05:00-7F-00/00/00-Clock[SUNRISE]
CLK 3K00:00:00-7F-00/00/00-Clock[RESET]
CLK 4K18:02:00-7F-00/00/00-Clock[SUNSET]
TPR 1Range N°1
TPL 0P12.0-00:00:00
TPL 1P26.5-05:00:00
TPL 2P12.0-07:00:00
TPL 3P 5.0-13:45:00
TPL 4P12.0-15:45:00
TPL 5P20.0-20:15:00
TPL 6P12.0-22:15:00
TPR 2Range N°2
TPL 7P12.0-00:00:00
TPL 8P15.5-02:45:00
TPL 9P12.0-04:45:00
TPL AP26.0-08:30:00
TPL BP12.0-10:30:00
TPL CP30.0-16:30:00
TPL DP12.0-18:30:00
More info => datasheet @ www.domintell.com - support.domintell@trump.be
```

Howto use DETH0x with your own application (SDK).

The SDK package can be downloaded on the Domintell support website.

!! Please use version 2.0.0 or higher (Binary file in version 2.0.0 is not compatible with version 1.0.0 - even if functions' prototypes have not changed. Sources of your software must be compiled with the new SDK package before using libdeth in version 2).

Library installation :

- **Linux**

```
$ tar -jxvf libdeth-2.0.0.tar.bz2
$ cd libdeth-1.1.0/linux
$ su -c "./install-lib.sh"
```

This script will copy the library (libdeth-2.0.0.so) in /usr/lib, create several symbolic links and run ldconfig. It will also copy libdeth header file (libdeth.h) in /usr/include.

Then to compile a program with the library :

```
$ gcc -ldeth -o myprog myprog.c
```

If the header file or the library is not found (because library or include path are not set), try :

```
$ gcc -I/usr/include -L/usr/lib -ldeth -o myprog myprog.c
```

- **Windows**

* Just copy libdeth.dll from win directory to c:\winnt\system32 or c:\windows\system32

* Copy libdeth.a to the linker directory of your compiler. If you are using, Code::Blocks, put it in :
C:\Program Files\CodeBlocks\lib

* Copy libdeth.h to the include directory of your compiler. If you are using, Code::Blocks, put it in :
C:\Program Files\CodeBlocks\include

In Code::Blocks, you have to link your project with the DETH library go to menu "Project->Build Options" and add in linker tab, the file libdeth.a (located in C:\Program Files\CodeBlocks\lib)

Library summary :

Here are prototypes of functions available :

```
extern int deth_getplatform(char * destbuffer, unsigned short buffsize);
    Return the platform you are using
extern int deth_getlibver(char * destbuffer, unsigned short buffsize);
    Return the library version
extern int deth_encryptpsw(char * destbuffer, unsigned short buffsize, char * password);
    Encrypt password to store it in destbuffer
```

Function explanation :

- deth_getplatform

int deth_getplatform(char * destbuffer, unsigned short buffsize)	
version	>= 1.0
destbuffer	buffer that will contain the returned null-terminated string (must be initialized before calling the function)
buffsize	number of byte that the function can write in destbuffer
returned value	number of bytes written in destbuffer (null-character not incl.). '-1' if error
output example	"Built for Linux"

- deth_getlibver

int deth_getlibver(char * destbuffer, unsigned short buffsize)	
version	>= 1.0
destbuffer	buffer that will contain the returned null-terminated string (must be initialized before calling the function)
buffsize	number of byte that the function can write in destbuffer
returned value	number of bytes written in destbuffer (null-character not incl.). '-1' if error
output example	"libdeth - Version 1.0.0 - 2008/04/29 - CARLIER Gaetan - (c) 2008 Trump s.a."

- deth_encryptpsw

int deth_encryptpsw(char * destbuffer, unsigned short buffsize, char * password)	
version	>= 1.0
destbuffer	buffer that will contain the returned null-terminated string (must be initialized before calling the function) !!! destbuffer can contain some null characters. Always use a memcpy function with returned value to manipulate the result stored in destbuffer
buffsize	number of byte that the function can write in destbuffer
password	Null-terminated ASCII string to encrypt. Min 4 characters and max 10 characters (null-character not incl.). "LOGIN" will be automatically append.
returned value	number of bytes written in destbuffer (null-character not incl.). '-1' if error
output example	"LOGINÏ#ÏÇ`BÊ\BÍVÏ#ÍÊ"

Functions declaration for several programming environment :

Example codes are included in SDK package :

- C (Windows and Linux)

```
#ifndef _LIBDETH_H
#define _LIBDETH_H

//#####
//# platform DEPENDANT declaration
//#####

#if defined(WIN32) || defined(WIN64)
#include "windows.h"
#define export __declspec(dllexport)
#elif defined(linux) || defined(_linux_)

#endif

//#####
//# prototype declaration
//#####

#if defined(WIN32) || defined(WIN64)
//This header file is not used by client applications under windows
extern export short __stdcall deth_getplatform(char * destbuffer, unsigned short buffsize);
extern export short __stdcall deth_getlibver(char * destbuffer, unsigned short buffsize);
extern export short __stdcall deth_encryptpsw(char * destbuffer, unsigned short buffsize, char * password);
#else
extern short deth_getplatform(char * destbuffer, unsigned short buffsize);
extern short deth_getlibver(char * destbuffer, unsigned short buffsize);
extern short deth_encryptpsw(char * destbuffer, unsigned short buffsize, char * password);
#endif

#endif
```

- VB6

```
Private Declare Function deth_getlibver Lib "libdeth.dll" _
    (ByVal buffer As String, ByVal bufsize As Integer) _
    As Integer
Private Declare Function deth_getplatform Lib "libdeth.dll" _
    (ByVal buffer As String, ByVal bufsize As Integer) _
    As Integer
Private Declare Function deth_encryptpsw Lib "libdeth.dll" _
    (ByVal buffer As String, ByVal bufsize As Integer, ByVal mypsw As String) _
    As Integer
```

!!! Always refer to libdeth.def to adjust "Aliases" function name

- Borland C++ Builder

No .lib file is needed to use the DLL with Borland C++ Builder. So, you have to declare the prototype of functions according the header file (libdeth.h).

```
* In Unit1.h (as global variable):
// Define prototypes
typedef short (__stdcall * DETH_GETLIBVER)(char * destbuffer, unsigned short bufsize);
typedef int (__stdcall * DETH_GETPLATFORM)(char * destbuffer, unsigned short bufsize);
typedef int (__stdcall * DETH_ENCRYPTPSW)(char * destbuffer, unsigned short bufsize,
char * password);

// Associate prototype to pointer (not yet linked with the DLL)
DETH_GETLIBVER deth_getlibver;
DETH_GETPLATFORM deth_getplatform;
DETH_ENCRYPTPSW deth_encryptpsw;
HINSTANCE hDethDLL;

* in "TForm1::FormCreate" procedure :
// Load DLL in memory
hDethDLL = LoadLibrary("libdeth.dll" );
// link pointer to entrypoint in DLL
deth_getlibver = (DETH_GETLIBVER)GetProcAddress(hDethDLL, "deth_getlibver" );
deth_getplatform = (DETH_GETPLATFORM)GetProcAddress(hDethDLL, "deth_getplatform" );
deth_encryptpsw = (DETH_ENCRYPTPSW)GetProcAddress(hDethDLL, "deth_encryptpsw" );

* free memory :
// break link
free(deth_getlibver);
free(deth_getplatform);
free(deth_encryptpsw);
// Release DLL handle
FreeLibrary(hDethDLL);
```